16

5. The method according to claim **4**, wherein the model of the spine segment relates to anatomical properties of three intervertebral discs of the spine.

6. The method according to claim **4**, wherein the model of the spine segment relates to anatomical properties of two vertebrae of the spine.

7. The method according to claim **5**, wherein the three intervertebral discs of the spine are associated with two vertebrae of the spine.

8. The method according to claim **6**, wherein three intervertebral discs of the spine are associated with the two vertebrae of the spine.

9. The method according to claim **1**, wherein the initial position of the initial segment of the spine in the image is established by considering anatomical knowledge about spines.

10. The method according to claim **9**, wherein the initial position of the initial segment of the spine in the image is established by detecting at least one anatomical landmark of the spine in the image.

11. The method according to claim **10**, wherein the at least one anatomical landmark relates to one of a vertebra at a first rib, a vertebra at a last rib, and/or a sacral foramina.

12. The method according to claim **1**, wherein the initial position of the initial segment of the spine in the image is established by considering Markov Random Field matching qualities.

13. An apparatus for labeling one or more portions of a spine in an image of a human or animal body, the apparatus comprising:

an image processing unit configured or programmed to:

a) match a model of a spine segment with segments of the spine in the image by:

starting matching the model of the spine segment with an initial segment of the spine in the image, wherein the initial segment of the spine in the image is located at an initial position along the spine in the image; and

continuing matching the model of the spine segment with one or more further segments of the spine in the image, wherein the further segments of the spine in the image are located at positions farther along the spine in the image, and the model of the spine segment relates to anatomical properties of one or more portions of the spine; and

b) label the one or more portions of the spine in the image in response to step a), wherein

the image processing unit is configured or programmed to establish an initial position of an initialization disk of the spine in the image by a disk profile corresponding to a string of region classes to which a set of disk candidates is mapped by classifying each disk candidate of the set of disk candidates to a region class or a region transition uncertainty; and

the disk profile is matched to a full spine profile and multiple initialization disk candidates, which result from the region class or the region transition uncertainty in the disk profile, are resolved by repeating the labeling of the one or more portions of the spine in the image.

14. A system for labeling one or more portions of a spine in an image of a human or animal body, the system comprising:

an image acquisition unit configured or programmed to acquire at least one image of at least a portion of a human or animal body; and

the apparatus according to claim **13**.

15. The system according to claim **14**, wherein the image acquisition unit is a computed tomography unit.

* * * * *